

Grade 10 Math Skills & Formula Worksheet

Geometry • Algebra II Foundations • Functions • Quadratics • Data

Aligned to commonly used U.S. grade-level/Common Core mathematics strands; states and districts may sequence topics differently.

Formula & Example Reference

Topic	Formula / Rule	Worked Example
Distance Formula	$d = \sqrt{[(x_1 - x_2)^2 + (y_1 - y_2)^2]}$	Example: (0,0),(3,4) → d=5.
Midpoint	$M = ((x_1 + x_2)/2, (y_1 + y_2)/2)$	Example: (2,4),(6,8) → (4,6).
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{(2a)}$	Use for $ax^2 + bx + c = 0$.
Vertex x-coordinate	$x = -b/(2a)$	For $y = ax^2 + bx + c$.
Pythagorean Theorem	$a^2 + b^2 = c^2$	Used for right triangles.
Circle Area	$A = \pi r^2$	Example: $r=6 \rightarrow 36\pi$.
Geometric Sequence	$a_n = a_1 r^{(n-1)}$	Example: 2,6,18 → $a_1=2$.

Practice Problems

- Find distance between (1,2) and (7,10).
- Find midpoint of (-3,5) and (9,-1).
- Solve $x^2 - 5x + 6 = 0$.
- Find vertex x-coordinate for $y = 2x^2 - 8x + 1$.
- A right triangle has legs 8 and 15. Find hypotenuse.
- Find area of a circle with radius 7 cm in terms of π .
- Find a_1 for 3, 6, 12, 24, ...
- Explain what a zero of a function means on its graph.

Show Your Work

Use the space on your printed copy or solve on a separate sheet. Check your calculations and label units where appropriate.

Answer Key

1. 10
2. (3,2)
3. $x=2,3$
4. $x=2$
5. 17
6. $49\pi \text{ cm}^2$
7. 48
8. An x -value where $f(x)=0$; the graph crosses/touches the x -axis.

Parent/Teacher Extension

Ask the learner to create one original real-world problem using a formula from this worksheet, solve it, and explain why the formula applies.

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